

interface **1518**, display **1520**, coder/decoder (CODEC) **1502**, bus **1522**, memory **1512**, communications circuitry **1510**, a speaker or transducer **1504**, a microphone **1506**, position sensors **1524**, proximity sensor **1526**, and an optical sensor with associated hardware **1508**. Processor **1516** may be any suitable programmable control device, including a GPU, and may control the operation of many functions, such as the 3D user interface effects discussed above, as well as other functions performed by personal electronic device **1500**. Processor **1516** may drive display **1520** and may receive user inputs from the user interface **1518**. In some embodiments, device **1500** may possess one or more processors for performing different processing duties.

[0071] Storage device **1514** may store media (e.g., photo and video files), software (e.g., for implementing various functions on device **1500**), preference information (e.g., media playback preferences), personal information, and any other suitable data. Storage device **1514** may include one or more storage mediums, including for example, a hard-drive, permanent memory such as ROM, semi-permanent memory such as RAM, or cache.

[0072] Memory **1512** may include one or more different types of memory which may be used for performing device functions. For example, memory **1512** may include cache, ROM, and/or RAM. Bus **1522** may provide a data transfer path for transferring data to, from, or between at least storage device **1514**, memory **1512**, and processor **1516**. CODEC **1502** may be included to convert digital audio signals into analog signals for driving the speaker **1504** to produce sound including voice, music, and other like audio. The CODEC **1502** may also convert audio inputs from the microphone **1506** into digital audio signals for storage in memory **1512** or storage device **1514**. The CODEC **1502** may include a video CODEC for processing digital and/or analog video signals.

[0073] User interface **1518** may allow a user to interact with the personal electronic device **1500**. For example, the user input device **1518** can take a variety of forms, such as a button, keypad, dial, a click wheel, or a touchscreen. Communications circuitry **1510** may include circuitry for wireless communication (e.g., short-range and/or long range communication). For example, the wireless communication circuitry may be WiFi® enabling circuitry that permits wireless communication according to one of the 802.11 standards. (Wi-Fi® is a registered trademark of the Wi-Fi Alliance.) Other wireless network protocols standards could also be used, either as an alternative to the identified protocols or in addition to the identified protocols. Other network standards may include BLUETOOTH®, the Global System for Mobile Communications (GSM®), and code division multiple access (CDMA) based wireless protocols. (BLUETOOTH® is a registered trademark of Bluetooth SIG, Inc., and GSM® is a registered trademark of GSM Association.) Communications circuitry **1510** may also include circuitry that enables device **1500** to be electrically coupled to another device (e.g., a computer or an accessory device) and communicate with that other device.

[0074] In one embodiment, the personal electronic device **1500** may be a personal electronic device capable of processing and displaying media such as audio and video. For example, the personal electronic device **1500** may be a media device such as media player, e.g., a mobile phone, an MP3 player, a game player, a remote controller, a portable communication device, a remote ordering interface, an audio

tour player, or other suitable personal device. The personal electronic device **1500** may be battery-operated and highly portable so as to allow a user to listen to music, play games or video, record video, stream video, take pictures, communicate with others, interact with a virtual operating system environment, and/or control other devices. In addition, the personal electronic device **1500** may be sized such that it fits relatively easily into a pocket or hand of the user. By being hand-held, the personal computing device **1500** may be relatively small and easily handled and utilized by its user and thus may be taken practically anywhere the user travels.

[0075] As discussed previously, the relatively small form factor of certain types of personal electronic devices **1500**, e.g., personal media devices, enables a user to easily manipulate the device's position, orientation, and movement. Accordingly, the personal electronic device **1500** may provide for improved techniques of sensing such changes in position, orientation, and movement to enable a user to interface with or control the device **1500** by affecting such changes. For example, position sensors **1524** may comprise compasses, accelerometers, gyroscopes, or GPS units. Further, the device **1500** may include a vibration source, under the control of processor **1516**, for example, to facilitate sending motion, vibration, and/or movement information to a user related to an operation of the device **1500**. The personal electronic device **1500** may include one or more optical sensors and associated hardware **1508** that enables the device **1500** to capture an image or series of images, i.e., video, continuously, periodically, at select times, and/or under select conditions. The personal electronic device **1500** may also include proximity sensors **1526** that enable the device **1500** to characterize and identify light sources in the real world environment surrounding the device **1500** and make determinations of whether, e.g., a user or the finger of a user is in close proximity to the display **1520** of device **1500**.

[0076] The foregoing description is not intended to limit or restrict the scope or applicability of the inventive concepts conceived of by the Applicants. As one example, although the present disclosure focused on 3D user interface effects for a virtual operating system environment; it will be appreciated that the teachings of the present disclosure can be applied to other contexts, e.g.: digital photography, digital videography, television, video gaming, biometrics, or surveillance. In exchange for disclosing the inventive concepts contained herein, the Applicants desire all patent rights afforded by the appended claims. Therefore, it is intended that the appended claims include all modifications and alterations to the full extent that they come within the scope of the following claims or the equivalents thereof.

1. A graphical user interface method, comprising:

- receiving positional data from one or more position sensors disposed within a device;
- determining a 3D frame of reference for the device based, at least in part, on the received positional data;
- receiving optical data from one or more optical sensors disposed within the device;
- determining a lighting condition in the environment of a user and a position of the user's eyes based, at least in part, on the received optical data; and
- generating a virtual 3D depiction of at least one graphical user interface object on a display of the device, wherein